Ch. 7 Practice Problems Homework #1

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7.22 Microwaves have frequencies in the range 109 to 1012/s (cycles per second), equivalent to between 1 gigahertz and 1 terahertz. What is the wavelength of microwave radiation whose frequency is 1.258 x 1010/s?

7.24 Calculate the frequency associated with light of wavelength 434 nm. (This corresponds to one of the wavelengths of light emitted by the hydrogen atom.)

7.28 What is the energy of a photon corresponding to microwave radiation of frequency 1.247 x 1010/s?

7.29 The green line in the atomic spectrum of thallium has a wavelength of 535 nm. Calculate the energy of a photon of this light.

7.30 Indium compounds give a blue-violet flame test. The atomic emission responsible for this blue-violet color has a wavelength of 451 nm. Obtain the energy of a single photon of this wavelength.

7.32 Calculate the frequency of electromagnetic radiation emitted by the hydrogen atom in the electron transition from n = 4 to n = 2.

7.33 Calculate the shortest wavelength of the electromagnetic radiation emitted by the hydrogen atom in undergoing a transition from the n = 5 level.

7. 34 Calculate the longest wavelength of the electromagnetic radiation emitted by the hydrogen atom in undergoing a transition from the n = 5 level.